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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/682,027 | 10/10/2003 | Tomomichi Kanda | 396.43206X00 | 8004 |

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| EXAMINER | |
|---|---|
| TRAN, THAO T | |
| **ART UNIT** | **PAPER NUMBER** |
| 1711 | |

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/682,027 | KANDA ET AL. | |
| | Examiner | Art Unit | |
| | Thao T. Tran | 1711 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *2-11 and 13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-11 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/18/2006 has been entered.

2. Claims 2-11 and 13 are currently pending in this application. Claims 1 and 12 have been canceled. Claim 13 has been newly added. Claim 10 has been amended.

3. In view of the prior Office action, the 112 rejection of the claims has been withdrawn due to the Amendment made thereto. The prior art rejections of the claims have also been withdrawn due to further consideration.

4. The following are new prior art rejections.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matlack et al. (US Pat. 5,028,462) in view of Tanaka (US Pat. 5,576,415) or Tanaka (US Pat. 6,303,741).

Matlack discloses a gas barrier multilayer structure for making bottles, the multilayer structure comprising an inner and an outer layer of a thermoplastic resin and at least one intermediate layer of a polyamide composition having excellent gas barrier properties (see col. 1, ln. 6-15). The polyamide composition comprises a copolyamide of isophthalic acid, adipic acid (alpha, omega-linear aliphatic dicarboxylic acid of $C_6$), and m-xylylenediamine in a molar ratio of 50-35/0-15/50 (see col. 5, ln. 22-27; col. 7, ln. 1-20). The multilayer structure further comprises adhesive layers interleaved between the intermediate layer and the inner or outer layers (see col. 3, ln. 46-47).

The polyamide composition has a glass transition temperature of 90°C and an oxygen transmission rate of about 2.0 cc-mil/100 $in^2$-day-atm (0.129 cc-mil/$m^2$-day-atm) (see col. 28-31). The thickness of the polyamide intermediate layer is about 5-20% of the total thickness of the multilayer (see col. 10, ln. 52-60).

Matlack further discloses that the polyamide can be prepared by any suitable means for copolymerization (see col. 7, ln. 20-23). The Examples show the polyamide is prepared by polycondensation process. However, Matlack does not teach the step of solid-phase polymerization after polycondensation.

Tanaka discloses a process of making polyamide, comprising solid-phase polymerization of a crystallizable polyamide to prevent the polymer from sticking to the walls of the apparatus (see abstract). The crystallizable (amorphous) polyamide is formed by polycondensation in a molten state (see col. 1, ln. 18-20) of a diamine, such as xylylenediamine, and dicarboxylic acids, such as adipic acid and isophthalic acid (see col. 4, ln. 17-21). The solid-phase polymerization

temperature for the polyamide is about 150°C lower than the melting point of the polymer (see col. 6, ln. 13-19).

The same arguments are presented with respect to the prior art of Tanaka '741.

Therefore, it would have been obvious to one of ordinary skill in the art to have employed the step of solid-phase polymerization of Tanaka in the invention of Matlack, to prevent the polyamide from sticking to the walls of the apparatus and thus improve the yield of the polyamide.

Although the combined references do not specify the minimum half crystallization time of the polyamide composition, since the references disclose the same chemical composition, the polyamide composition of the references would inherently have the same physical properties, such as crystallization.

In regards to claim 5, Matlack teaches the thermoplastic resin in the outer and inner layer to be polyesters (col. 4, ln. 23-26), which are the same as disclosed in the instant specification. Thus, the Viscat softening point of the thermoplastic resin layers would inherently be the same as presently claimed.

7. Claims 2-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada et al. (US Pat. 4,908,272) in view of Tanaka (US Pat. 5,576,415) or Tanaka (US Pat. 6,303,741).

Harada teaches a gas barrier multilayer structure for containers (see col. 1, ln. 5-7), comprising at least one layer of a copolyamide (A) and at least one layer of a thermoplastic resin (B) other than the copolyamide (see abstract). An adhesive layer is between the copolyamide layer (A) and the thermoplastic resin layer (B) (see col. 5, ln. 11-15; Comparative Example 2).

Comparative Example 2 also shows a thickness of the copolyamide layer to be 37 microns and the total thickness of the multilayer structure is 288 microns, giving the copolyamide layer 12% of the total thickness. The thermoplastic resin (B) is formed from polypropylene (see col. 4, ln. 10-11; Comparative Example 2). The copolyamide is formed by polycondensation in a molten state of adipic acid, isophthalic acid, and xylylenediamine in a ratio of 83/11/100 (see col. 3, ln. 31-41; col. 9, ln. 56-59). The glass transition temperature of the polyamide is 89°C. However, Harada does not teach the step of solid-phase polymerization after polycondensation.

Tanaka discloses a process of making polyamide, comprising solid-phase polymerization of a crystallizable polyamide to prevent the polymer from sticking to the walls of the apparatus (see abstract). The crystallizable (amorphous) polyamide is formed by polycondensation in a molten state (see col. 1, ln. 18-20) of a diamine, such as xylylenediamine, and dicarboxylic acids, such as adipic acid and isophthalic acid (see col. 4, ln. 17-21). The solid-phase polymerization temperature for the polyamide is about 150°C lower than the melting point of the polymer (see col. 6, ln. 13-19).

The same arguments are presented with respect to the prior art of Tanaka '741.

Therefore, it would have been obvious to one of ordinary skill in the art to employ the step of solid-phase polymerization of Tanaka in the invention of Harada, to prevent the polyamide from sticking to the walls of the apparatus and thus improve the yield of the polyamide.

Although the combined references do not specify the minimum half crystallization time, oxygen transmission, or melting point of the polyamide layer, since the references disclose the

same chemical composition, the polyamide layer of the references would inherently have the same physical properties.

8. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matlack and Tanaka '415 or Tanaka '741 as applied to claim 10 above, and further in view of Harada.

Matlack, Tanaka '415, and Tanaka '741 are as set forth in claim 10 above and incorporated herein.

In regards to claim 6, Matlack teaches the inner and outer layers comprising thermoplastic resins, such as PET or polycarbonate (see col. 4, ln. 23-26). However, the reference does not teach the thermoplastic resin to be a polyolefin.

Harada teaches a gas barrier multilayer structure, comprising at least one layer of a copolyamide and at least one layer of a thermoplastic resin other than the copolyamide (see abstract). The thermoplastic resin may be polypropylene, polyester, or polycarbonate (see col. 4, ln. 5-13).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have employed polyolefin in replace of polyester or polycarbonate, as taught by Harada, in the multilayer of the Matlack combination, and would have given the same effects. This is because Harada teaches that polyolefin, polyester, and polycarbonate can be used as alternatives of each other.

***Response to Arguments***

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao T. Tran whose telephone number is 571-272-1080. The examiner can normally be reached on Monday-Friday, from 9:00 a.m. - 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thao T. Tran
Primary Examiner
Art Unit 1711

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August 30, 2006